Translation

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference TU03-0703W01	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/JP03/09574	International filing date (*day/month/year*) 29.07.2003	Priority date (*day/month/year*) 13.11.2002
International Patent Classification (IPC) or national classification and IPC Int. Cl⁷ C23C 14/34 C22F 1/18, B21J 1/02, 5/00		
Applicant Nikko Materials Co.,Ltd.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 04.12.2003	Date of completion of this report 17.06.2004
Name and mailing address of the IPEA/JP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

national application No.
PCT/JP 03/09574

I. Basis of the report

1. With regard to the elements of the international application:*

☐ the international application as originally filed

☒ the description:
pages 1-9, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☒ the claims:
pages 5, as originally filed
pages 3, 4, 7-9, as amended (together with any statement under Article 19
pages _____, filed with the demand
pages 2, 10, filed with the letter of 02.06.2004

☒ the drawings:
pages 1-3, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the sequence listing part of the description:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:
☐ the description, pages _____
☒ the claims, Nos. 1, 6
☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

INTERNATIONAL [redacted]IMINARY EXAMINATION REPORT

[redacted]national application No.
PCT/JP03/09574

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	2-5, 7-10	YES
	Claims		NO
Inventive step (IS)	Claims	2-5, 7-10	YES
	Claims		NO
Industrial applicability (IA)	Claims	2-5, 7-10	YES
	Claims		NO

2. Citations and explanations

The invention concerning the claims 2 to 5 and 7 to 10 is not disclosed in any documents cited in the ISR (International Search Report) and is considered to be novel and to involve an inventive step.

In particular, the point that the average crystal grain diameter of the target is made to be a fine crystal grain size at 80 μ or less is not disclosed in the documents 1 to 4, and even one having ordinary skill in the art does not invent the point easily.

Amendments Under Article 19

CLAIMS

1. (Deleted).

2. (Amended) A manufacturing method of a Ta sputtering target in which a Ta ingot or billet formed by melting and casting is subject to forging, annealing, rolling processing and the like to prepare a sputtering target, wherein the ingot or billet is forged and thereafter subject to recrystallization annealing at a temperature of 1373K to 1673K, and forging and recrystallization annealing at a temperature of 1373K to 1673K are repeated at least twice.

3. (Amended) A manufacturing method of a Ta sputtering target according to claim 2, wherein the recrystallization annealing after the forging or rolling conducted in the recrystallization annealing at a temperature of 1373K to 1673K is performed at a temperature between the recrystallization starting temperature and 1373K.

4. (Amended) A manufacturing method of a Ta sputtering target according to claim 2 or claim 3, wherein, after the final rolling processing, recrystallization annealing is performed at a temperature between the recrystallization starting temperature and 1373K, and finish processing is further performed to obtain a target shape.

5. A manufacturing method of a Ta sputtering target according to claim 4, wherein, after performing rolling, crystal homogenization annealing or stress relieving annealing is performed.

6. (Amended) A manufacturing method of a Ta sputtering target according to any one of claims 2 to 5, wherein the average crystal grain diameter of the target is made to be a fine crystal grain size at 80 μm or less.

7. (Amended) A manufacturing method of a Ta sputtering target according to anyone of claims 2 to 5, wherein the average crystal grain diameter of the target is made to be a fine crystal grain size at 30 to 60 μm.

8. (New) A manufacturing method of a Ta sputtering target in which a Ta ingot or billet formed by melting and casting is subject to forging, annealing, rolling processing and the like to prepare a sputtering target, wherein the ingot or billet is forged and thereafter subject to recrystallization annealing at a temperature of 1373K to 1673K so to make the average crystal grain diameter of the target a fine crystal grain size at 80 μm or less.

9. (New) A manufacturing method of a Ta sputtering target in which a Ta ingot or billet formed by melting and casting is subject to forging, annealing, rolling processing and the like to prepare a sputtering target, wherein the ingot or billet is forged and thereafter subject to recrystallization annealing at a temperature of 1373K to 1673K so to make the average crystal grain diameter of the target a fine crystal grain size at 30 to 60 μm.

10. (Amended) A manufacturing method of a Ta sputtering target according to any one of claims 2 to 9, and a Ta sputtering method obtained with said method, wherein there is no uneven macro structure in the form of streaks or aggregates on the surface or inside the target.